



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,669	09/30/2003	Dave Stumbo	2132.0080001	2029
33140	7590	06/10/2005	EXAMINER	
NANOSYS INC. 2625 HANOVER ST. PALO ALTO, CA 94304			LIANG, REGINA	
			ART UNIT	PAPER NUMBER

2674

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/673,669	Applicant(s) STUMBO ET AL.	
	Examiner Regina Liang	Art Unit 2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-42,44-50 and 52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-42,44-50 and 52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/29/05, 5/19/05</u> | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2674

### DETAILED ACTION

1. This office action is responsive to the amendment filed on 4/29/05. Claims 1, 3-42, 44-50, 52 are pending in this application.

#### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 3-42, 44-50, 52 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 173, 175-22, 224, 225, 227-243, 245 of copending Application No. 10/674,060. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications are claiming nanowire transistor having a plurality of nanowires extending between source electrode and drain electrode.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The following is an example for comparing claim 1 of this application and claim 234 of copending application 10/674,060.

Claim 1 of this application	claim 234 of copending application 10/674,060
An active matrix backplane used within a display, comprising:  A plurality of pixels; and	A semiconductor device comprising;  A substrate;
A plurality of pixel transistors, wherein a pixel transistor within said plurality of pixel transistors controls a corresponding pixel within said plurality of pixels,	A plurality of nanowires deposited on the substrate, wherein each of said plurality of nanowires comprises a core and one or more shell layers disposed about said core; and
Wherein each pixel transistor within said plurality of pixel transistors is a nanowire transistor comprising a plurality of nanowires extending between a first source electrode and a first drain electrode of the transistor.	At least a first source contact and a first drain contact formed in or on the substrate providing electrical connectivity to the plurality of nanowires, wherein the plurality of nanowires form a channel between said at least first source and drain contacts.

As can be seen above, claim 1 this application is a broader version of claim 234 of copending application. Claim 1 differs from claim 234 of copending application in that claim 1 reciting a active matrix display backplane having a plurality of transistors and a plurality of pixels while claim 234 of copending application reciting that a semiconductor device having a substrate, however, it would have obvious to recognize the transistor of a matrix display is a semiconductor device, therefore, they are not patentably distinct from each other.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-42, 44-50, 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art (Figs. 1, 2 and sections [0003]-[0008], hereinafter the admitted prior art) in view of Koyama et al (US. PUB. NO. 2002/0024489 hereinafter Koyama) and Avouris et al (US. PUB. NO. 2004/0061422 hereinafter Avouris).

As to claim 1, Figs. 1 and 2 of the admitted prior art discloses an active matrix backplane used within a display, comprising a plurality of pixels, a plurality of pixel transistors. The admitted prior art does not disclose each pixel transistor is a nanowire transistor and comprises a plurality of nanowires extending between a first source electrode and a first drain electrode of the transistor. However, it is well known in the art that an active matrix display having a plurality of pixels and using field-effect transistors (for instance, thin-film transistors) as the switching elements (e.g., see Koyama [0039]). It is also old and well known in the art that a field-effect transistor comprising a nanowire transistor, and the nanowire transistor comprising a plurality of nanowires extending between a first source electrode and a first drain electrode of the transistor (see Avouris on page 2, sections [0032], [0033], and [0035]). Thus, in view of the teachings of Koyama and Avouris, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the pixel transistor of the admitted prior art to be a field-effect

Art Unit: 2674

transistor comprising nanowires transistor as taught by Avouris since the nanowires forming the channel region is made very small such that the space requirement on a chip area is reduced.

As to claims 4, 7, 27, 32, 52, Fig. 2 of the admitted prior art teaches the matrix backplane comprising a plurality of column transistors and a plurality of row transistors. Avouris teaches the transistor comprising a nanowire transistor. Thus it would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify the column transistors and the row transistors of admitted prior art to be nanowire transistors as claimed since the nanowire forming the channel region is made very small such that the space requirement on a chip area is further reduced.

As to claims 5, 8, Avouris teaches the nanowire transistor comprising nanowires extending at least between a source and a drain electrode.

As to claims 10-13, 28-31, to further use nanowire technology to make the related components as claimed would have been further obvious to one of ordinary skill in the art since it would further reduce the size of the overall device on a chip area.

As to claims 14-26, the admitted prior art teaches the display is LCD, OLED, etc as claimed ([0003]).

As to claims 33-36, see section [0009] of the admitted prior art.

As to claims 3, 6, 9, 37-42, 44-49, the admitted prior art as modified by Koyama and Avouris discloses the claimed invention except for the arrangement, location, value and material of the nanowires transistors. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the admitted prior art as modified by Koyama and Avouris to have the nanowires transistors as claimed, since it has been held that discovering an

Art Unit: 2674

optimum value, range, location, material of a result effective variable involves only routine skill in the art.

As to claim 50, Avouris teaches a transistor having a row electrode (source), a gate electrode, and a pixel electrode (drain).

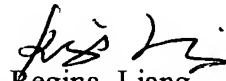
***Response to Arguments***

6. Applicant's arguments with respect to claims 1, 3-42, 44-50, 52 have been considered but are moot in view of the new ground(s) of rejection.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (571) 272-7693. The examiner can normally be reached on Monday-Friday from 8AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard, can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Regina Liang  
Primary Examiner  
Art Unit 2674

6/6/05